CLAIMS

What Is Claimed Is:

1. An implantable medical device comprising:

a substrate, wherein at least a portion of said substrate is coated with a first layer including a polymer containing a drug; and

a barrier overlying said first layer, wherein said barrier comprises an inorganic material and is adapted to reduce a rate of release of the drug from said polymer after insertion of the device into a body of the patient.

2. The implantable medical device of claim 1, wherein said barrier has a thickness ranging from about 50 angstroms to about 20,000 angstroms.

3. The implantable medical device of claim 1, wherein said barrier has a thickness ranging from about 100 angstroms to about 5,000 angstroms.

4. The implantable medical device of claim 1, wherein said barrier is a homogeneous layer.

5. The implantable medical device of claim 1, wherein said barrier comprises a plurality of discrete deposits.

6. The implantable medical device of claim 1, wherein said barrier is intermixed with an outer portion of said first layer.

7. The implantable medical device of claim 1, wherein said inorganic material is selected from the group consisting of silicides of niobium, tantalum, titanium, tungsten, vanadium, and zirconium.

8. The implantable medical device of claim 1, wherein said inorganic material is selected from the group consisting of oxides of aluminum, barium, calcium, hafnium, niobium, silicon, tantalum, titanium, tungsten, and zirconium.

9. The implantable medical device of claim 1, wherein said inorganic material is selected from the group consisting of nitrides of chromium, silicon, titanium, and zirconium.

10. The implantable medical device of claim 1, wherein said inorganic material is selected from the group consisting of carbides of silicon and titanium, molybdenum disulfide, amorphous diamond, diamondlike carbon, pyrolytic carbon, ultra low temperature isotropic carbon, amorphous carbon, strontium titanate, and barium titanate.

11. The implantable medical device of claim 1, wherein said inorganic material is a metal selected from the group consisting of aluminum, chromium, gold, hafnium, iridium, niobium, palladium, platinum, tantalum, titanium, tungsten, zirconium, and alloys thereof.

12. The implantable medical device of claim 1, wherein said drug is selected from the group consisting of antineoplastic, anti-inflammatory, antiplatelet, anticoagulant, fibrinolytic, thrombin inhibitor, antimitotic, antiallergic, and antiproliferative substances.

13. The implantable medical device of claim 1, wherein said drug is selected from the group consisting of paclitaxel, docetaxel, methotrexate, sodium heparin, hirudin, estradiol, actinomycin D, angiopeptin, captopril, nitroprusside, and nitric oxide.

14. The implantable medical device of claim 1, wherein said drug is selected from the group consisting of azathioprine, vincristine, vinblastine, agratroban, forskolin, vapiprost, mitomycin, cilazipril, lisinopril, phosphodiesterase inhibitors, and trizaolopyrimidine.

15. The implantable medical device of claim 1, wherein said substrate is a stent.

16. The implantable medical device of claim 1, wherein said substrate is a graft.

17. An implantable medical device comprising:

a substrate, wherein at least a portion of said substrate is coated with a first layer including a polymer containing a drug; and

a barrier overlying said first layer, said drug having significantly lower diffusivity in said barrier than in said first layer.

18. An implantable medical device comprising:

a substrate, wherein at least a portion of said substrate is coated with a first layer including a polymer containing a drug; and

a barrier overlying said first layer, said drug having significantly lower solubility in said barrier than in said first layer.

19. A method for making an implantable medical device, the method comprising:

providing a substrate having a surface;

applying a first layer comprising a polymer and a drug on said surface; and

applying a barrier over the first layer, wherein said barrier comprises an inorganic material and is adapted to reduce a rate of release of the drug from said polymer after insertion of the device into a body of a patient.

20. The method of claim 19, wherein said barrier is applied by a process selected from the group consisting of plasma enhanced chemical vapor deposition (PECVD), cathodic arc physical vapor deposition, sputtering, reactive sputtering, thermal evaporation, electron beam evaporation, electroless plating, ion plating, thermal spraying, and ion beam deposition.

21. The method of claim 19, wherein said barrier is applied by a process selected from the group consisting of ion implantation, plasma ion implantation, alkoxide hydrolysis, and electroless plating.